Goddard Procedures and Guidelines

DIRECTIVE NO. GPG 8072.1
EFFECTIVE DATE:
EXPIRATION DATE:

APPROVED BY Signature:
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Preface

P1. PURPOSE

The purpose of this procedure is to establish a consistent method for the control of processes that directly affect the quality of products.

P2. APPLICABILITY

This procedure applies to the development of all GSFC products and processes covered by the GSFC Quality Management System (see GPD 1270.3).

P3. AUTHORITY

GPD 1270.3, GSFC Quality Management System (QMS)

P4. REFERENCES

a. GPG 1710.1, Corrective and Preventive Action

b. GPG 3410.2, Employee Training and Qualification

c. GPG 5330.1, In-Process and Final Inspection and Test

d. GPG 5330.3, Inspection and Test Status

e. GPG 5340.2, Control of Nonconforming Product

f. GPG 8070.2, Identification and Application of Statistical Techniques

g. GPG 8700.1 Design Planning and Interface Management

P5. CANCELLATION

None

Procedure

1. DEFINITIONS

a. Product Design Lead (PDL) - The manager or leader with overall responsibility for managing the design activity, managing the technical and organizational interfaces identified during design planning, and where required, forming and leading the Product Design Team (PDT). The term refers to flight project managers, mission managers, instrument managers, subsystem technical managers, integrated product development team leaders, lead engineers, etc.

b. Process - Set of interrelated activities which transform inputs into outputs.

c. Special process - A process where the results cannot be fully verified by subsequent inspection and testing of the product and where processing deficiencies may become apparent only after the product is in use. Such processes may require pre-qualification of operations prior to production, as determined by the process owner and/or process user.

d. Process owner - The single, lowest level organization with institutional responsibility for overseeing a process to ensure it is implemented effectively. The process owner is responsible for:

1. Ensuring that processes related to the control of product quality are carried out under controlled conditions and in accordance with the GSFC Quality Management System,

2. Developing and managing new processes to meet customer needs in accordance with the GSFC Quality Management System,

3. Periodically reviewing the effectiveness of processes through analysis of process metrics.

2. IMPLEMENTATION

Refer to the flow diagram. Subparagraph numbers match flow diagram blocks.

2.1 The PDL is responsible for identifying required processes during the design activities necessary to meet the requirements of the Customer Agreements and project design plan (see GPG 8700.1). This includes the definition of overall quality management plans to be met through the implementation of processes.

2.2 Process owners assess existing process capabilities in terms of specific process requirements.

2.3 Process owners develop Process Management Plans for each production, installation, and servicing process under their cognizance. Process Management Plans shall address the following:

a. Documented procedures defining the manner of production, installation, and servicing, where the absence of such procedures could adversely affect quality;

b. Use of suitable equipment, and a suitable working environment;

c. Compliance with reference standards/codes, quality plans, and/or documented procedures;

d. Identification, monitoring and control of suitable process parameters and product characteristics;

e. The approval of processes and equipment, as appropriate;

f. Criteria for workmanship, stipulated in the clearest practical manner;

g. Suitable maintenance of equipment to ensure continuing process capability.

2.3.1 In addition to the above, Process Management Plans for Special Processes shall also address pre-qualification (pre-production) of the process operations, including associated equipment, and:

a. Process operator training/qualification and/or;

b. Continuous monitoring and control of identified process parameters.

The need for Special Process pre-qualification (including those established Special Processes which are modified) shall be determined by the Special Process owner, taking into account the specified needs of the users of the Special Process. Special Process operator training/qualification determination and documentation shall be accomplished in accordance with GPG 3410.2.

2.4 The PDL shall identify those product characteristics which are to be inspected/tested to verify the results of the process applied. Such inspection/test events, related criteria for workmanship and acceptance (this may include written standards, representative samples, or illustrations) , and process events, as applied to GSFC product, shall be documented in accordance with GPG 5330.3.

2.5 Process Capability Evaluation

Continuing process capability shall be evaluated by the results of both product evaluation and the monitoring of process parameters identified in the Process Management Plan.

a. Product Evaluation - Processes which yield unacceptable product shall be subject to corrective action root cause analysis and investigation in accordance with GPG 1710.1.

b. Process evaluation - In accordance with the Process Management Plan, process parameters shall be monitored and evaluated over time for evidence of negative trends or out of control situations. Specific statistical techniques to be employed will be defined and documented in accordance with GPG 8070.2. Records of process evaluation and process correction shall be maintained by the process owner.

3. RECORDS

a. Process Management Plans

b. Process parameter evaluation records

Process Control Flowchart

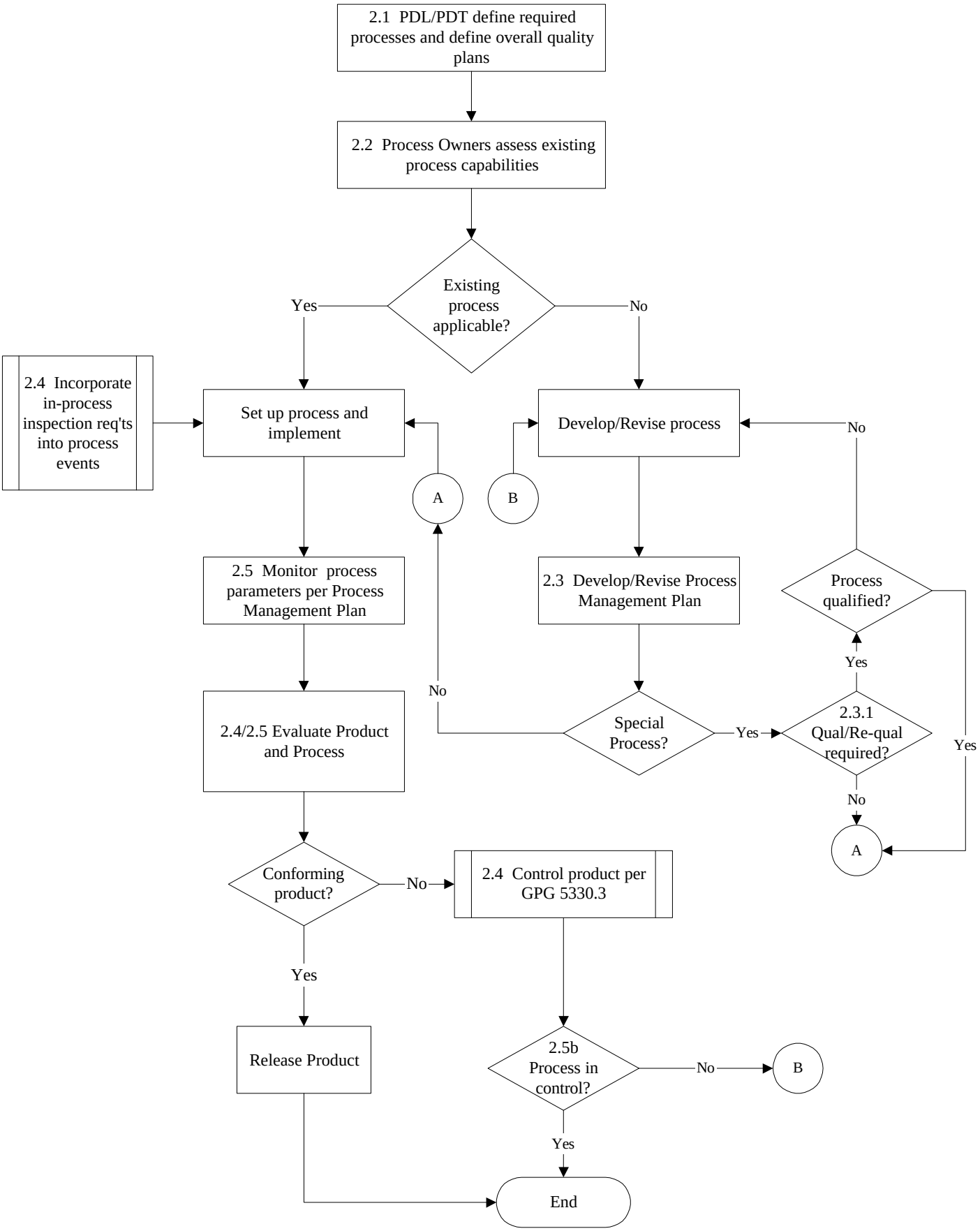

Figure 1